SECTION 805
ELECTRICAL-MECHANICAL PERFORMANCE AND OPERATIONAL TESTS

805.01. DESCRIPTION.

This work shall consist of furnishing all the necessary equipment, tools, and labor required to perform the tests specified within this Specification or as directed by the Engineer.

805.03. EQUIPMENT.

Furnish all the necessary specialized test equipment, tools, electrical diagrams, and labor required to perform the tests specified.

805.04. CONSTRUCTION METHODS.

(a) **General.** Notify the Engineer not less than 48 hours prior to the beginning of the testing procedures. The Engineer shall notify the city, county, or other agency responsible for supplying the electrical power for testing procedures.

(b) **Electrical Field Testing.** Prior to the start of functional testing, perform the following tests on all traffic signal, sign lighting, and highway lighting circuits, in the presence of the Engineer; include the written results in the project file:
Tests each circuit for continuity.
Test each circuit for grounds.
Make an insulation resistance test at 50 volts DC on each circuit between the circuit and ground.
Make sure the insulation resistance is not be less than 10 megohms on all circuits.

NOTE: Ground rods, after installation, shall not have a resistance to ground in excess of 25 ohms. Do not perform the insulation resistance test on magnetometer detector devices. Also, do not make splices in the condulet or junction box adjacent to the magnetometer prior to performing the test on the lead-in conductors between the splices and the controller cabinet field terminals.

(c) **Electrical Functional Tests.** Notify the appropriate governmental agency at least 24 hours in advance of commencing the functional tests of a traffic signal system, in order that adequate precautions may be taken with respect to traffic service on the street system. Where traffic is being maintained through the project, make every effort to insure the safe movement of vehicles during this testing period.

NOTE: At no time shall the new system and an existing system be in operation at the same time.

To determine that all parts of the system are functioning properly, operate highway lighting systems—both conventional and high mast—and traffic signal systems for a 24-hour continuous period. Put the electrical system into service and patrol it immediately to ascertain if there are any defects. During the test period , inspect the system at intervals established by the Engineer. In addition, at some time during this test, throw all safety switches to check their operation, and sometime during the night-time portion of the test, switch all photoelectric controllers from auto to manual and back to auto, to observe the action of the photoelectric controller.

At the end of the 24 hours of continuous operation, again inspect the complete electrical system to see that everything is operating normally and prove to the satisfaction of the Engineer that all fixtures and equipment have been properly installed and are in operating condition.

Test all sign lighting systems, flashing beacons, and electro-mechanical changeable message signs in accordance with the test above, if they are connected to either the highway lighting system or to independent power sources. If they are not permanently connected to power at the time of installation, provide temporary power to each device and demonstrate, to the satisfaction of the Engineer, that they are properly installed and functioning as intended.

(d) **Mechanical Test.** Following the successful completion of the 24-hour functional test, allow all high-mast lighting systems to operate normally for six days. During these 6 days, observe the system at night time for any defects in the luminaire or lamps. Demonstrate to the Engineer that each lowering device assembly is functioning properly by completing one lower and raise cycle on each assembly.

(e) **Defects.** The above tests are to show that the luminaires, lamps, wiring, controllers, and related equipment have been properly installed and are in a satisfactory operating condition. Correct any defects to the satisfaction of the Engineer.

805.05. METHOD OF MEASUREMENT.

The *tests specified* will not be measured for payment. Include all costs of performing these tests in other items of work.

SECTION 806
POLES AND MAST ARMS

806.01. DESCRIPTION.

This work shall consist of furnishing materials and installing poles, mast arms, and pedestal poles for traffic signals, as well as highway lighting luminaires, in accordance with these Specifications and in reasonably close conformity with the locations and dimensions shown on the Plans or established by the Engineer.

806.02. MATERIALS.

Materials shall meet the requirements specified in AASHTO Standard Specifications for Structural Supports of Highway Signs, Luminaires, and Traffic Signals, and Section 700 of these Specifications.

806.04. CONSTRUCTION METHODS.

(a) **General.** The design of the poles and mast arms shall be the responsibility of the manufacturer. The poles and mast arms shall be designed for a minimum of 80 mph (128 km/hr) wind velocity and shall meet all other design requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.